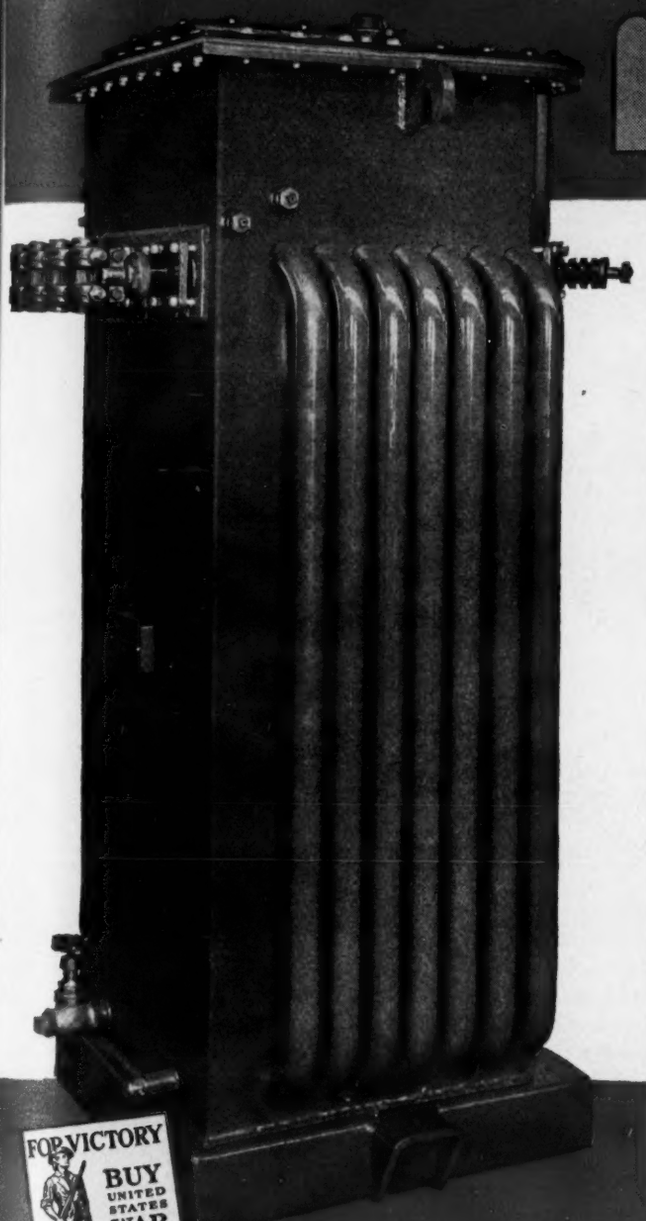
WAGNER

NOFLAMOL TRANSFORMERS

(NON-INFLAMMABLE LIQUID-FILLED)

Give you a combination of advantages worth investigating



★ INDOOR INSTALLATION WITHOUT VAULT

Noflamol transformers may be installed indoors without the use of expensive fireproof vaults since the liquid used in the transformers is non-inflammable. Considerable installation expense is thereby avoided.

★ IMPROVED PLANT EFFICIENCY . . .

Savings are effected by dividing the circuit into several sections and placing a Wagner Noflamol transformer at the load-center of each, eliminating long runs of secondary copper, reducing line losses, and improving voltage regulations. Plant efficiency is thereby improved.

★ NO SPECIAL FOUNDATIONS . . .

The only foundation necessary for installation of Wagner Noflamol transformers is a level floor, strong enough to support their weight.

★ SAVES VALUABLE FLOOR SPACE . . .

Wagner Noflamol transformers may be installed in out-of-the-way places, thereby releasing valuable floor space for production. Since no vault is needed, less space is necessary for a Noflamol transformer installation.

★ SAVES MAINTENANCE EXPENSE . . .

The liquid used in Noflamol transformers is chemically stable, has high dielectric strength, and will not sludge.

Bulletin TU-33 describing Wagner Noflamol transformers will be mailed on request.

T43-1

Wagner Electric Corporation

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The new Liberty Ship radio
Developed for The Maritime Commission
By I. T. & T.'s manufacturing associate
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Is helping save the manpower hours
That build our bridge of ships.

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But *one*
Compact, all-in-one
Radiotelegraph Unit—
Takes care of
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Installed in one-fifth the time
Normally required—
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AN IT&T ASSOCIATE

NEWS ABOUT PEOPLE

Funk Gets Nomination for A.I.E.E. Presidency

Nevin E. Funk, vice-president in charge of engineering and station operation, Philadelphia Electric Co., who has just been nominated for the presidency of the American Institute of Electrical

Engineers (ELECTRICAL WORLD, February 13, page 10), is well equipped in experience, ability and personality to take over the responsibilities of his new office.

Mr. Funk's association with the Philadelphia Electric Co. has been marked with consistent advancement from his first job as assistant foreman of station construction. He was consecutively assistant superintendent and superintendent of Schuylkill station, assistant operating engineer, operating engineer, assistant chief engineer, chief engineer, assistant general manager, and finally vice-president, the position he has held for twelve years. A graduate of Lehigh University, Mr. Funk was identified with the Westinghouse Electric & Manufacturing Co., the New York Central Railroad and the teaching staff of the Georgia School of Technology prior to entering the employ of the Philadelphia Electric Co. in 1907.

For many years Mr. Funk has been prominent in activities of various technical and engineering societies, notably the American Institute of Electrical Engineers and the American Society of Mechanical Engineers, and is a fellow in each of these organizations. He has served on a number of A.I.E.E. national committees, including chairmanship of the Lamme and Edison Medal committees. He was chairman of the Philadelphia section of the A.S.M.E., 1924–25, of the power division, 1923–25 and of the research committee, 1934–39, and was elected this year chairman of the committee on meetings and programs in addition to having served as chairman or member of various other committees of the Association. He has also participated actively in the affairs of the Edison Electric Institute and the Association of Edison Illuminating Companies.

He has contributed 43 technical papers and two important inventions to science. Most of the technical papers were presented at important local or national society meetings, including the Second World Power Conference in Berlin. The inventions are the Funk oil sludge accelerator and the Funk oil water washer.

•

► A. W. HERRINGTON, chairman of the board of directors of the Marmon-Herrington Co., has been elected a director of the Army Ordnance Association.

► JAMES F. KOEHLER, chief engineer of the Martins Ferry (Ohio) municipal light plant, has resigned, effective March 15, after 34 years with the plant.

► LYNN H. ASHLEY, attorney of Hudson, Wis., has been appointed to the Wisconsin Public Service Commission by Governor Walter S. Goodland. Mr. Ashley succeeds Commissioner Robert A. Nixon, who resigned, and whose term would have expired in March.

Applegate Takes Office As Vice-President

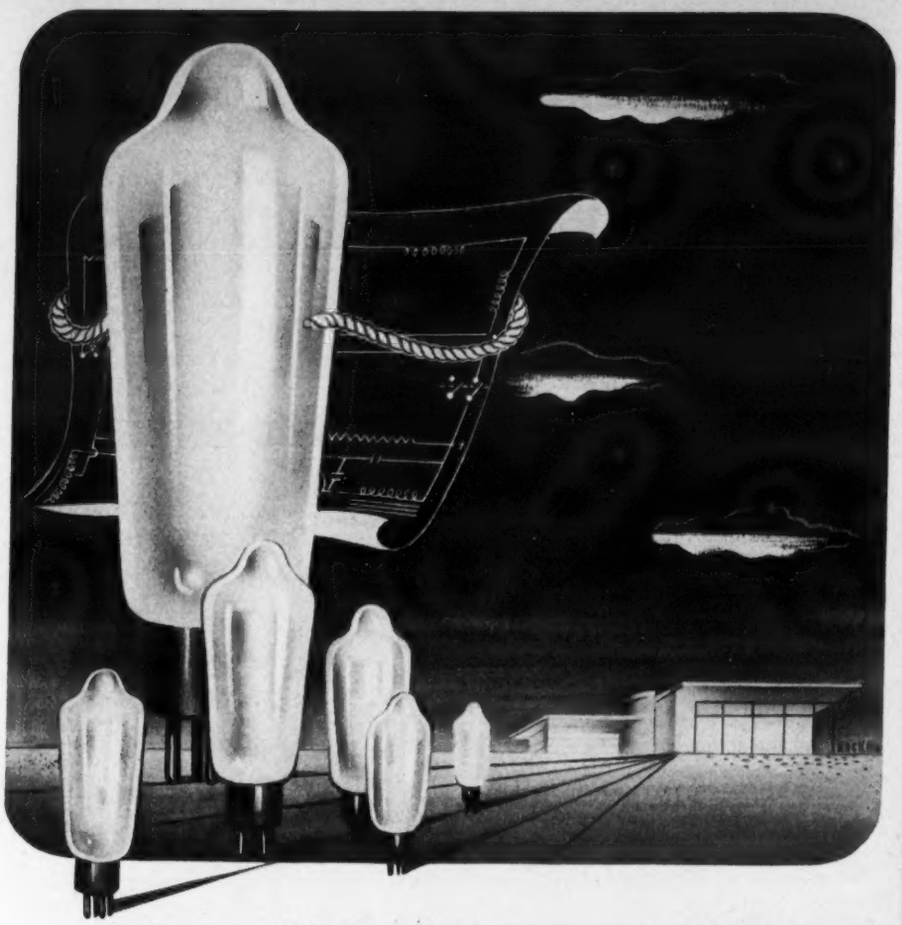
Kenneth P. Applegate, whose election as vice-president of the Hartford Electric Light Co. was noted in ELECTRICAL WORLD (February 13, page 16), has been in the employ of that utility throughout his entire career.

He is a native of Englishtown, N. J., and was graduated in electrical engineering from Rensselaer Polytechnic Institute in 1912. He joined the Hartford company as a draftsman in the engineering department shortly after leaving college, and after two years was transferred to the motor sales department, where he was engaged in industrial power engineering for 18 months. From December, 1916, to January, 1929, Mr. Applegate was the

Bachrach

company's purchasing agent. In the latter month he was made general manager, succeeding A. D. Colvin, now executive vice-president Connecticut Power Co., and has held this position since. He retains the title and duties of general manager in addition to his new duties as vice-president.

Mr. Applegate is fuel agent for the



This family head is already planning

AMERICA'S AFTER-VICTORY HOME...

HE ISN'T WORRIED much about the placing of the rooms. He's willing to leave that kind of thing to the architects. But one thing he's going to insist on, or his name isn't Electronics—that America's new homes take advantage of every electrical time- and trouble-saver that America's creative ingenuity can produce!

He's going to give us completely new lighting, and he's going to switch it on and off for us, regulate its intensity. He's going to give us radio and television communication with our neighbors and with the world. He's going to control our high-frequency heating systems, our automatic door openers, our ventilating and air conditioning units . . .

Are you planning now to supply the tremendous *extra* load of electric power this family head is going to demand? If you are, if, you, too, believe that domestic consumption of power is due for an upsurge once this war has been won, you'll find a sympathetic ear for your plans in Roebling's Engineering Department and Development Laboratories.

For Roebling, too, is planning toward that end, with a complete line of electrical wires and cables that includes magnet wire and coils, portable cords and cable, signal wire and control cables, weatherproof wires and a wide variety of power and lighting cables . . . More than this, Roebling is planning now for the production of new types of conductors and insulations and coverings as these are required by the changing electrical industry.

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ELECTRICAL WIRES AND CABLES

Connecticut Power Co. and is a vice-president and director of the Hartford Electric Steel Corp., besides being a trustee of Rensselaer Polytechnic Institute.

•

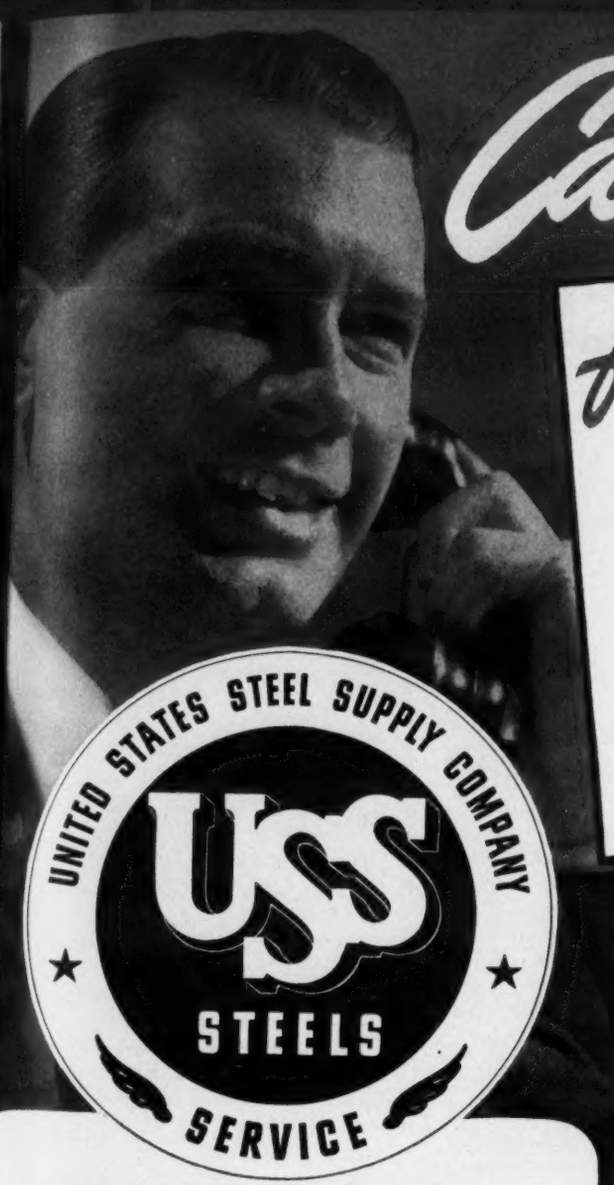
Wescott and Scaff, New Ebasco Vice-Presidents

T. C. Wescott and Harold H. Scaff, new vice-presidents of Ebasco Services Incorporated (ELECTRICAL WORLD, February 13, page 16) bring to their new executive positions extensive experience in the Electric Bond & Share System.

T. C. Wescott

H. H. Scaff

Mr. Wescott became connected with Bond & Share in 1911 and served as a construction engineer until 1924, when he assumed supervision of construction activities. In 1933 he was elected president of the Phoenix Engineering Corp., then a subsidiary of Electric Bond & Share, and in 1936 he became engineering manager for Ebasco Services, the position he occu-



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These new alloy steels were developed as substitutes for the old style alloy steels to save critical materials such as nickel and chromium. They cover a wide range of properties—were especially designed to meet present conditions. In fact, many "NE" steels are actually out-performing the steels previously used.

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Our Chicago Warehouse has been designated by the War Production Board as a warehouse to distribute the following aircraft products:

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These materials are for use in airplanes only and available only to the aircraft industry and sub-contractors. If you are eligible for these materials, phone, write or wire: United States Steel Supply Company, 1319 Wabansia Avenue, Chicago, Ill. Telephone, BRUnswick 2000—Teletype CG. 605.

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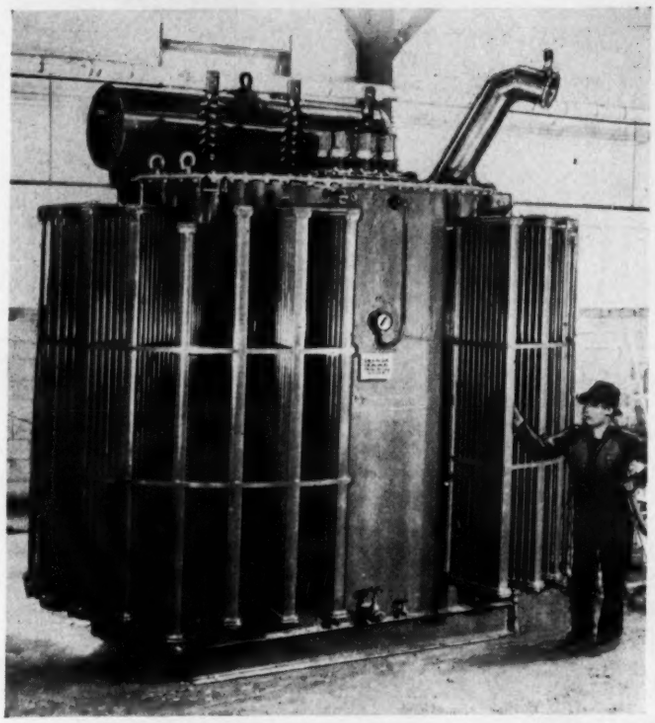
UNITED STATES STEEL

UPTEGRAFF *Power* TRANSFORMERS



"Uptegraff" is a name for Quality and Service in Power Transformers.

Designed by an Engineering force, built by an organization, entirely devoted to making each Transformer deliver, and deliver its full rated capacity without interruption.

Transformers exclusively from a plant not too big to take care of unusual design in individual requirements, and big enough to have a production capacity to meet many of today's most exacting war emergencies.

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Tell us what we may do on your requirements, and know the Transformer satisfaction it means to be an Uptegraff customer.

R. E. UPTEGRAFF *Manufacturing Co.*

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Uptegraff TRANSFORMERS QUALITY SERVICE

pied at the time of his present promotion. A native of Patten, Me., and a graduate of the University of Maine he spent two years after graduation with the New York Central Railroad and Erie Railroad as a draftsman, rodman and instrument man. He then joined the staff of Bond and Share.

Mr. Scaff attended the School of Commerce, Accounts and Finance of New York University. After serving as lieutenant of infantry in the AEF in France in the First World War, he worked in an accounting capacity with several companies before joining the Electric Bond & Share organization in 1923. For the twelve subsequent years he spent most of his time in the field in connection with the accounting and financial problems of operating companies. Two years of this time were spent in Brazil. He was appointed assistant general auditor of Ebasco in 1936 and comptroller in 1940.

•

▶ HERBERT A. WAGNER, chairman of the board of the Consolidated Gas Electric Light & Power Co. of Baltimore, has been honored by the directors of the Baltimore Association of Commerce. The board passed a resolution in recognition of Mr. Wagner's 25 years of leadership in the economic and community development of the city.

▶ DR. ALBERT W. HULL, assistant director of the General Electric Research Laboratory, was elected president of the American Physical Society at its recent meeting in New York. A native of Southington, Conn., Dr. Hull was graduated in 1905 from Yale University, where he also obtained his Ph.D. in 1909. After four years as instructor and as assistant professor of physics at Worcester Polytechnic Institute, he joined the G. E. Research Laboratory staff in 1914 as research physicist. In 1918 he was made assistant director. In the course of his career he has received many honors, including the Howard N. Potts gold medal of the Franklin Institute, the Morris Liebmann Prize for his work on vacuum tubes and the honorary degree of doctor of science from Union University.

▶ LOUIS KAHN was elected president of Albert Kahn Associated Architects and Engineers, Inc., Detroit, at a recent meeting of the board of directors, to succeed the late Albert Kahn. Mr. Kahn has been associated with the organization since 1909 and for many years has served as secretary-treasurer. He is a member of the American Institute of Architects and of the Detroit Engineering Society. Three vice-presidents were also elected by the directors: Sheldon Marston, George H.

Hiehls and Robert E. Linton. Albert Kahn Associated Architects and Engineers, Inc., was formed about two years ago to succeed the former Albert Kahn, Inc.

•

Fostoria Makes Additions to Sales Department

To add impetus to the promotion of engineered light for seeing in industrial operations and of the near infra-red process for baking, drying, dehydrating and preheating tasks in industry, Fostoria Pressed Steel Corp., Fostoria, Ohio, has organized two new

W. S. Crandall

L. Goble

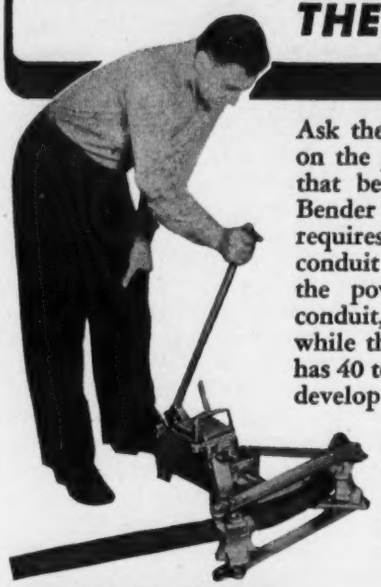
divisions, according to E. L. Bates, vice-president and director of sales.

W. S. Crandall has been placed in charge of all near infra-red equipment activities. Mr. Crandall has been associated with the company as western division manager and director of engineering.

In charge of all lighting equipment activities is Lawrence Goble, who for the past twelve years has been associ-

GREENLEE BENDERS

EASIER AND FASTER FOR THE MAN ON THE JOB



Greenlee No. 770 Bender

Ask the man who knows . . . the operator right out on the job doing the bending . . . and he'll tell you that bending conduit with the Greenlee Hydraulic Bender is even easier than it looks. To bend conduit requires power . . . approximately 31 tons for 4-inch conduit . . . and Greenlee Hydraulic Benders have the power. The 770 Bender, for 1¼ to 3-inch conduit, has 25 tons of easily developed power, while the No. 775 Bender, for 3 to 4½-inch conduit, has 40 tons of hydraulic power. One man can quickly develop this power by simply pumping the handles. These light, portable benders are built compactly into one unit, are easily carried to the jobs and set up, and will not move and twist about when in use. Our Bender Booklet S-116 will show you how you can cut bending costs on every job.

Send for BENDER BULLETIN S-116

GREENLEE TOOL CO.

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THE NEW MODEL **560**

INDUSTRIAL ANALYZER

Measures:

A.C. Current to 30 Amperes
A.C. & D.C. Volts to 1500 Volts
Resistances to 2500 Ohms

Features:

- Completely Portable — No External Source of Current Required
- Same voltage Scale Used for Both A.C. and D.C. Voltage Measurements
- Individual Jacks for Each Range Reduces Possibility of Damaging Meter to Absolute Minimum
- All Calibrations Printed Directly on Meter. No Computation or Charts.

Designed to meet War Time Requirements the MODEL 560 quickly and accurately enables the 3 basic electrical measurements Volts, Ohms and Amperes. Features are—same scale used for both A.C. and D.C. Voltage measurements, separate tip jacks for each individual range reduces possibility of damaging the meter to absolute minimum—the basic 30 Ampere range may be extended by use of an external transformer—resistances as low as 1/10th of an Ohm can be easily read.

SPECIFICATIONS:

5 A.C. VOLTAGE RANGES: 0 to 60/150/300/600/1500 Volts
5 D.C. VOLTAGE RANGES: 0 to 60/150/300/600/1500 Volts
A.C. CURRENT: 0 to 30 Amperes (may be extended by use of an external transformer)
LOW RESISTANCE RANGE: 0 to 250 Ohms
HIGH RESISTANCE RANGE: 0 to 2500 Ohms

MODEL 560 comes housed in hand-rubbed wooden cabinet complete with portable cover, self-contained battery, test leads and instructions, Size 8¼" x 7" x 4¼"; Shipping weight 7 pounds. Net Price **$28.50**

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in

LINEAR SYSTEMS

by

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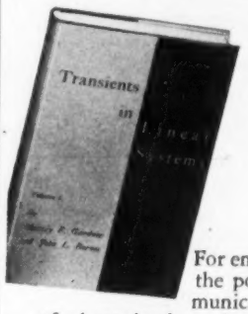
Professor, Applied Mathematics, Tufts College



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For engineers in both the power and communications branches of electrical engineering, or in mechanical engineering concerned with vibrations and instrumentation, or in mathematical physics and applied mathematics.

This book is in two volumes; the material has been divided into separate parts on one- and multidimensional problems. Invariant systems having lumped parameters, leading to ordinary integrodifferential equations and different equations, are treated in Volume I, and those having distributed parameters, leading to partial integrodifferential equations, are treated in Volume II. Volume II is in preparation.

The first volume presents material of interest in topics of current importance, such as: automatic control or transient feedback; network duality; mechanical networks and transients; electrical-mechanical analogs; and the solution of difference equations by functional transformation methods.

Emphasis is placed upon a systematic presentation of the method of setting up physical problems in mathematical form.

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ated with Indiana Service Corp., Ft. Wayne, Ind. Mr. Goble joined the Fostoria organization on January 1.

OBITUARY

Joseph H. Brewer

Joseph H. Brewer, who some years ago played a prominent part in the consolidation of utilities covering nearly 150 Indiana cities, and more recently a banker, died in Butterworth Hospital, Grand Rapids, Mich., on February 9, of a heart ailment. He was 67 years old. Mr. Brewer wasn't trained into the utility business. He was originally a court stenographer who saw an opportunity in gas operation. As the first step he purchased the Holland (Mich.) Gas Co., then joined with an associate who had another property, and finally buying up some "dead" units, revitalized them. It was at this time that he became interested in hydro-electric development. Formation of the American Public Utilities Co. as a holding company resulted in 1912. In 1924 Mr. Brewer sold his holdings to the Insull interests.

Until his last illness forced his retirement Mr. Brewer was active in the management of the Michigan National Bank & Trust Co., which he organized through a merger of the National Bank of Grand Rapids and the Michigan Trust Co.

•

Walter Kidde

Walter Kidde, president of Walter Kidde Co., Inc., engineers and contractors, with war production plants in Bloomfield and Belleville, N. J., Canada and England, and an internationally known industrialist, died, of a heart attack, on February 9 at his home in Montclair, N. J. He was 65 years old. Mr. Kidde's company originally specialized in the manufacture of fire extinguishers and since the war has been almost completely converted to war production. Mr. Kidde started in business in 1900, when he was 23. He ultimately became prominent as an engineer, builder, manufacturer, civic leader and public official.

Born in Hoboken, Mr. Kidde was graduated from Stevens Institute of Technology in 1897. He became founder and president of Walter Kidde & Co., engineers and constructors, New York, in 1900 and later established the fire prevention factory for manufacture of marine and aircraft equipment in Bloomfield. He was early identified with town planning and the solution of Montclair's sewage disposal problem. He served as a member of the Highway Commission during the plan-

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Made in three sizes for handling all poles—from the smallest to the big ones 22 inches in diameter. Every utility that has tested the Multipoint Cant Hook has reordered in ever increasing numbers—it saves poles, time, and cost.

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a **TRUE TEMPER** *PRODUCT*

MULTIPOINT CANT HOOK

6 points, ¼" x ¼" in size grip the pole securely but leave no deep hole to encourage rot and decay. Points renewable when worn. Furnished in small, medium and large sizes for handling poles up to 22" in diameter. Prices and complete description on request.

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in speeding the war program by using Reliable Straightline splices on new construction and on maintenance.

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by using these perfect joint making units over and over again.

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ning of the Holland Tunnel. Among the highmarks of his career was the building of the Edison Memorial Tower at Menlo Park.

•

▶ LAUREN D. NORDSTRUM, who has been connected with the motor and generator engineering department of the General Electric Co. at Fort Wayne, Ind., died on February 1, in his sixty-sixth year. He had been associated with General Electric at Fort Wayne for 38 years. Mr. Nordstrum was a member of the American Institute of Electrical Engineers.

▶ HARRY J. MCKNIGHT, service manager for Graybar Electric Co. in Richmond, Va., died on February 3 at a Richmond hospital after an illness of several months. He was 56 years of age. Mr. McKnight had been with Graybar for 41 years, entering its employ in Philadelphia in his youth, and since 1924 had resided in Richmond.

▶ NICHOLAS STONESTREET, electrical engineer, died on February 11 in New York, at the age of 44. Mr. Stonestreet was born in Washington, D. C., and was graduated from the University of Maryland in 1921. From 1921 to 1923 he worked as electrical engineer on the Philippine Islands government-owned electric system. During the nine succeeding years he was identified with the Electric Bond & Share Co. in Mexico and Brazil.

▶ HARRY E. DREVENSTEDT, vice-president in charge of sales for the National Carbon Co., New York, N. Y., died on February 10 at his home in White Plains, N. Y., in his fifty-third year. Mr. Drevenstedt was graduated from Yale University in 1913. He joined the National Carbon Co. in 1918, working first in the company's plant at Niagara Falls, N. Y. He was made a vice-president five years ago.

▶ W. BRILEY WRIGHT, director of safety of Eastern Shore Public Service Co., Salisbury, Md., died suddenly, of a heart attack, on January 26 in that city. Mr. Wright, in his fifty-first year, had been identified in safety work for the past 21 years. Employed by Eastern Shore Public Service Co. in 1922 to direct its program of safety, he remained in this position until 1931, when he became safety director for Electric Management & Engineering Corp., New York. In 1936 Mr. Wright was appointed safety director of Virginia Public Service Co., Alexandria, Va., and Eastern Shore Public Service Co., and in 1942 he resumed full-time duties with the latter utility. He was active in the affairs of the National Safety Council, and at the time of his death was chairman of the exhibits committee, public utilities section.

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SHAVE--- *decay*
CROP---- *butts*

TREAT *with*.....
PERMATOX "A"

by dipping, spraying or brushing for effective control of decay, "shell rot" or attack by termites or powder post beetles. Also use it on new poles to insure longer service life.

PERMATOX *A* is easy to handle and inexpensive to apply. Available in *economical concentrates* (1 to 10, also 1 to 5) to save freight and cargo space on shipments to foreign utilities.

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MANUFACTURING-MARKETS

Nine Companies Fined $77,500

Cable concerns plead nolo contendere on charges of price-fixing

Nine companies charged with conspiracy to fix prices of U. S. Navy orders for cable pleaded *nolo contendere* (no assumption of guilt, but no defense) before Federal Judge Thomas F. Meaney in Newark, N. J., this week, and fines totaling $77,500 were imposed. Six individuals named in the sealed indictments returned August 17, 1942 (ELECTRICAL WORLD, August 29, page 8) were not prosecuted by the government.

Maximum fines of $10,000 were imposed on six of the companies—Okonite Products Co., Rockbestos Products Corp., Collyer Insulated Wire Co., General Cable Corp., National Electric Products Corp. and Anaconda Wire & Cable Co. A fine of $7,500 was imposed on the General Electric Co., while American Steel & Wire Co. and Phelps-Dodge Copper Products Corp. were fined $5,000 each.

Finds No Dishonesty

Tom C. Clark, special assistant attorney-general, told the court:

"Our investigation discloses that there is here involved neither dishonesty nor deception as generally understood by the public, nor such as would constitute deceit on the part of these defendants.

"In regard to the General Electric Co., it should be pointed out that in October, 1940, the company announced the adoption of the policy that it did not intend to make unreasonable profits on war contracts. Early in February, 1942, General Electric told the War and Navy Departments that, with increasing volume and decreasing manufacturing costs, it was the intention of General Electric to give the government the benefit of those savings. Accordingly, the General Electric Co. immediately embarked in February, 1942, on the carrying out of that policy, and proceeded to make voluntary price reductions on contracts with the government. These reductions commenced in the early spring of 1942, and many of them had been effected prior to the investigation which resulted in this indictment."

Frank C. Jones, president of the Okonite Co., in a prepared statement, said that his organization had not entered a defense because "a trial, which would last from six to eight weeks, would have taken from the Okonite Co. for that period four men absolutely essential to the work of the company in the war effort and . . . production of war materials would drop materially."

"The Okonite Company is not guilty of defrauding the government," he said, "nor does it consider it is guilty of violating the anti-trust laws or of any other laws. By making the plea of *nolo contendere*, the company has not conceded that there has been any violation of the law, nor has the company been asked to make such a concession. . . ."

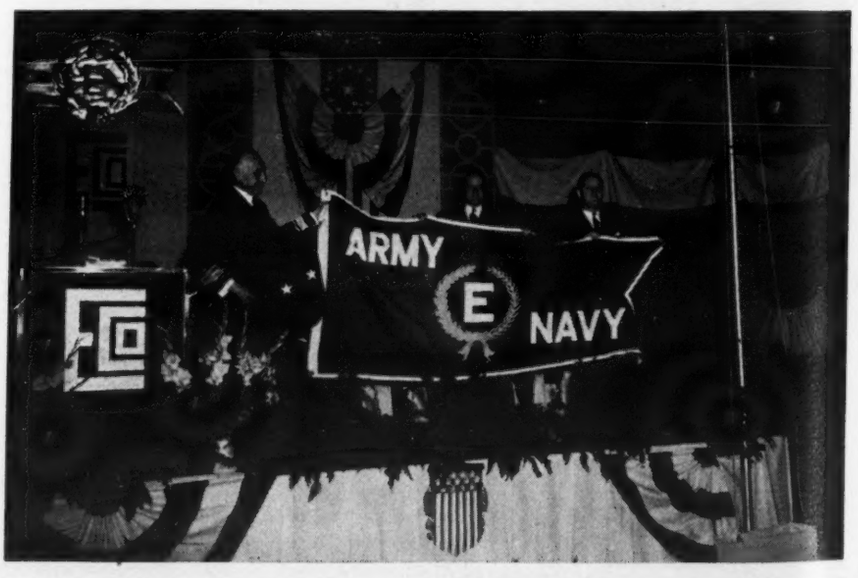
•

Report Big Increase in Installed Power

Under the impetus of war there has been an unprecedented increase in the installed horsepower capacity in American factories, according to the January issue of the Survey of Current Business, a monthly publication of the Department of Commerce.

It is estimated that installed capacity in United States factories at the end of 1942 was approximately 59,000,000 hp., compared with 50,452,000 hp. in 1939, the latest year for which detailed data on factory facilities are available.

"Conversion of existing plants from



ELLIOTT CO. GETS "E" AWARD—For outstanding performance in the production of power equipment for army, navy and war industries, the Jeannette plant of the Elliott Co. was given the Army-Navy "E." Rear-Admiral W. C. Watts, U.S.N. (Ret.), presents the coveted pennant to Elliott executives Howard M. Hubbard, president, and N. A. Benson, works manager

civilian to war industries," K. C. Stokes, author of the article, stated, "has involved changes in productive machinery and tooling. But in the case of power equipment it has been possible to utilize almost completely, and in most instances with no loss of efficiency, the facilities already installed.

After covering all phases of the factory power situation and the vital importance of power equipment to a nation at war, the article concludes: "Though new uses must inevitably be found for numerous plants, America will have in its expanded industrial capacity much of the horsepower equipment needed to meet the challenge of demand for civilian goods in the post-war period."

•

Lamp Anti-Trust Trial Adjourned for Duration

The Justice Department has announced that the Federal District Court at Trenton, N. J., had issued an order adjourning the trial of an anti-trust suit against General Electric Co., Corning Glass Works and several other manufacturers of electrical lamps for the duration of the war.

This action, similar to that taken in other anti-trust cases involving war producers, was based upon a certification by the Secretaries of War and Navy to Attorney-General Biddle that continuance of the trial "would seriously impair the war production of two of the principal defendants."

•

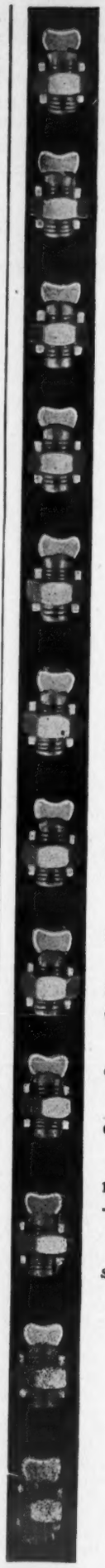
Fan Industry Engaged 100% in War Work

At a recent meeting of the National Association of Fan Manufacturers announcement was made that a poll of the members indicated that the fan industry is now engaged 100 percent in war work, producing products of the most vital nature, particularly in connection with the synthetic rubber program, high octane gas and all types of fans and blowers for ships of every type.

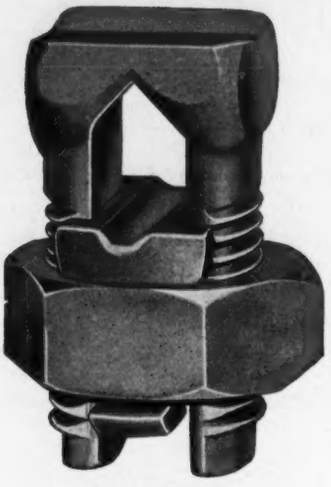
•

Launches Sales Campaign

Launching one of the most powerful promotional campaigns in ventilation history, the Ilg Electric Ventilating Co. of Chicago is out to make priority sales now and range-find markets for tomorrow, according to a statement by C. W. Dexter, advertising manager. Mr. Dexter said the Ilg executive group reached a decision that 1943 was a year for "taking" action, rather than "talking" action.



COPPER TO COPPER PREVENTS METALLIC FIGHTS



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97% copper content, hard metal nut—strong as steel. Full thread engagement with bolt.

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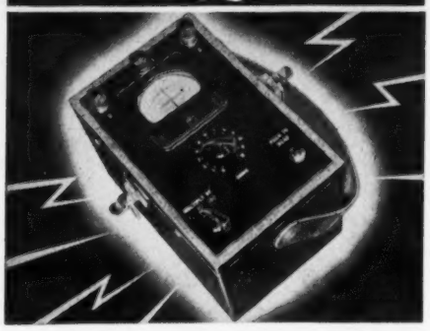

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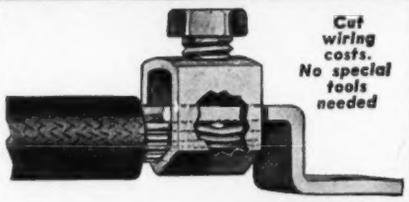

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Field Reports on Business

Business reports from various sections of the country continue favorable, with few indications of a let-up in the present pace. The demand for communications materials is active, with radio apparatus remaining in the foreground. Engineering construction last week dropped 32 percent below the corresponding week last year.

NEW YORK

The stock market had one of its busiest weeks last week, trading in shares in a single day coming close to the 2,000,000 mark—highest since December 30, 1941. Public utility stocks had the lion's share of the new business with many hitting new highs. Wall Street felt that the sentiment in favor of utility issues was caused chiefly by a feeling of confidence in an improving political situation; that, despite the "death sentence" clause affecting holding companies, the effect was discounted largely by extraordinary lows of 1941 and 1942. In one day, for instance, turnover in Commonwealth & Southern alone was 100,100 shares. Brokers attributed the activity also to the fact that the public had money to spend, now that curtailment of consumers' durable goods had reached serious proportions, and interest on the part of the public in an extensive list of low- and medium-priced issues.

Department store sales for the week ended February 6 were 19 percent higher than the corresponding week a year ago, according to the Federal Reserve Board, while the week previous they had been on a par with the '42 figures. Boston was up 15 percent, New York 11 percent, Philadelphia 4 percent and Richmond 19 percent.

Engineering construction volume for the week, $70,939,000, was 13 percent lower than the week previous and 32 percent below the total for the corresponding 1942 week, according to *Engineering News-Record*. January heavy engineering construction totaled $226,826,000—55 percent under the average for the five weeks of January, 1942.

NEW ENGLAND

Bangor Hydro-Electric Co. has purchased a second 2,000-kva. G. E.-S. Morgan Smith vertical unit for its Milford (Me.) hydro-electric plant. A contract for making improvements in the Cos Cob power plant of the New Haven R. R. has been awarded to Gibbs & Hill, Inc., New York, the work to cost more than $500,000. Boston Edison will install an additional 35,000-kva. transformer at Edgar station and will increase the capacity of the present 110-kv. transformers at that point to enlarge its interconnection with New England Power.

A Connecticut manufacturer has received a contract to furnish a large amount of communication apparatus to the Navy; a Boston manufacturer has sold 20 electric water stills for use by the Navy; an order for 50,000 ft. of electric cable has been placed with a prominent manufacturer; a group of floor stand illuminators and an unspecified number of "Variac" transformers had been booked, indicating wide variations in electrical equipment being supplied by this district.

Bids have been submitted on more than 8,000 resistors, a number of major electric appliances, including refrigerators and dish-washing machines, and knife switches. Resistance and marine use wire quotations have been filed; ventilating units for ship galley installations are in demand, and electric medical apparatus in which manufacturers in this district specialize is receiving a good deal of attention.

CHICAGO

Industrial development for war in the Chicago area continues. Since mid-January expansion has been announced for such plants as: Barber-Green—paving equipment—Aurora, Ill., and Republic Steel, Studebaker and Buick airplane engine plants are receiving appropriations for their second expansion since starting production. Wickwire-Spencer Steel has organized an aviation division and will make propellers in Chicago.

In non-war industry the picture is not good. Electrical contracting groups are nearing the end of private work. Inventories of wiring materials are about exhausted, with no relief in sight except on high priority work. Of 475 Cook County contractors only 117 have any contracts of significance. About 50 are on priority work. The ten or more motor repair shops, however, are swamped.

As stocks of appliances in Chicago stores dwindle, demand is also decreasing. Sales showed a marked decline in January over last year. Appliance repair business is on the upgrade. Estimates are that Chicago dealers repaired twice as many appliances as in January a year ago.

Delay in obtaining turbo-blowers last week caused Washington to cancel a $13,000,000 contract for new units at Wood River, Ill., oil refinery of Standard Oil of Indiana and for new plant there for production of butadiene for the government.

PACIFIC COAST

Pacific Coast manufacturers and wholesalers report an exceedingly busy month, especially during the February 6-7 week-end, when they worked large staffs to cope with anticipatory orders placed by all government contractors and departments. These were to cover their actual requirements during the ensuing period of transition from priorities and allocation to the Controlled Material Plan.

New war housing in the East Bay area includes conversion of private structures into 1,400 family units, besides trailer parks, aggregating 800 units. The electrical installation for the average industrial housing project has gradually decreased to keyless and pull sockets in lieu of fixtures and a recent 4,000-unit Bay area installation requisitioned only 200 flush or surface switches. However, the aggregate quantities are very large and are well scattered throughout the West.

California Railroad Commission has approved Western Pacific's application to install a central traffic control along its system in Feather River Canyon, the cost being $1,200,000, largely electrical.

Recent orders and inquiries include $95,000 switchgear equipment for Hawaiian Islands; 2,000,000 lb. of welding rods, value $140,000, for a tanker shipyard in Bay district; two groups of 600-amp., 132-kv. Bowie disconnect switches; an $18,863 award for eight Kelman 600-amp., 15-kv. circuit breakers for Los Angeles.

Sales Opportunities

FLORIDA — Municipal Electric Department, Jacksonville, in co-operation with War Production Board, is completing surveys for proposed expansion in steam division at municipal generating station, to include installation of new boiler and auxiliary equipment. Entire project is reported to cost close to $700,000.

OHIO—Goodyear Aircraft Corp., Akron, a subsidiary of Goodyear Tire & Rubber Co., same place, plans expansion in plant for production of aircraft equipment for government, including new buildings and installation of machinery and electrical equipment for large increased capacity. Cost about $2,140,000, with financing by Defense Plant Corp.

COLORADO—U. S. District Engineer Office, Denver, has approved plans for new auxiliary air field, with hangars, shops and other structures. Complete night-lighting equipment and electrical distribution system and facilities will be installed. Entire project will cost over $500,000. Work is scheduled to be carried out soon.

ILLINOIS—City Council, Belvidere, plans power transmission line from diesel-electric waterworks station on Meadow Street to point of water supply for power service for pumping station. Approval has been secured from WPB and work will be carried out soon.

NEW YORK—Buffalo Arms Corp., Cheektowaga, manufacturer of fire arms, will make extensions in a plant for production for government, including installation of machinery and electrical equipment for large increased output. Cost estimated over $665,000, with financing by Defense Plant Corp.

WASHINGTON—War Department, Washington, D. C., has authorized expansion in army hospital in Walla Walla County, comprising new buildings, extensions in power substation, service lines and other facilities, with complete electrical installation in new buildings, including conduits, lighting fixtures, etc. Entire project will cost about $1,000,000, and will be supervised by U. S. District Engineer Office, Portland, Ore.

TENNESSEE — City Council, Nashville, plans relocation of a TVA transmission line in vicinity of municipal airport, made necessary by enlargement of airfield. New rights of way are being negotiated at cost of about $35,000. Work is scheduled to be carried out soon.

KENTUCKY—American Rolling Mill Co., Middletown, Ohio, plans expansion in plant for production for government, including new building, with installation of machinery and electrical equipment for considerable increase in capacity. Cost estimated close to $500,000, with financing by Defense Plant Corp.

DISTRICT OF COLUMBIA—Senate Naval Affairs Committee, Washington, has bill under consideration for appropriation of $720,000,000 for construction of advance naval bases at different locations, with complete shore facilities, including shops and other operating buildings, power plants, power substations, electrical distribution lines, fuel storage tanks with electric-operated pumping machinery, aviation field facilities and electrical equipment for such service, and miscellaneous structures and electrical installations. Project will be carried out under direction of Bureau of Yards and Docks, Navy Department, Washington.

TEXAS—Town Councils of Floresville, Poth and Stockdale are completing arrangements for purchase of the respective local distribution systems of San Antonio Public Service Co., San Antonio, and will operate as municipal properties in future. Extensions and improvements are planned. San Antonio company will continue to furnish power supply, with change to wholesale basis, and meter installations and facilities for this purpose.

ILLINOIS—Republic Steel Corp., Republic Building, Cleveland, Ohio, plans expansion in plant for production for government, comprising number of new mill structures, with machinery and electrical equipment for large increased capacity. Entire project will cost about $23,000,000, and will be financed by Defense Plant Corp.

MINNESOTA—Northern States Power Co., Minneapolis, is asking bids on general construction contract until February 26 for proposed addition to High Bridge steam-electric generating station, for which plans have been in progress for several months. Construction is scheduled to begin in 30 to 60 days. New addition will be used for expansion in electrical division, installation to include a new 50-000-kw. turbine-generator unit and auxiliary equipment. Entire project is estimated to cost about $5,000,000. Public Utility Engineering & Service Corp., 231 South LaSalle St., Chicago, Ill., is consulting engineer.

DISTRICT OF COLUMBIA—General Purchasing Officer, Panama Canal, Washington, will receive bids until February 27 for quantity of cartridge type resistors, dry batteries, cable pulling grips, porcelain split knobs, rubber insulating tape, battery-charging clips, etc. (Schedule 6814). Also, until March 1, for quantity of boiler tube brushes (Schedule 6818).

MAINE—Saco-Lowell Shops, Inc., 60 Batterymarch St., Boston, Mass., manufacturer of machinery, plans expansion in plant in Maine for production for government, including new building, with installation of machinery and electrical equipment. Cost estimated about $385,000, with financing by Defense Plant Corp.

CALIFORNIA—Tavares Construction Co., National City, plans expansion in munitions plant for production for government, comprising new buildings and installation of machinery and electrical equipment for enlarged capacity. Entire project will cost about $535,000, and will be financed by Defense Plant Corp.

KANSAS—War Department, Washington, D. C., has authorized expansion in air base, including additional hangars, shops and other buildings, with extensions in power substation, electrical distribution lines, electrical equipment for industrial service, and other electrical facilities. No estimate of cost announced. Horner & Wyatt, Board of Trade Building, Kansas City, Mo., and Tanner & Mitchell, Great Bend, Kan., are architects and engineers. Project will be supervised by U. S. District Engineer Office, Kansas City, Mo.

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With or without Nut Retainers.

Also available in some sizes for aluminum to aluminum and copper to aluminum connections.

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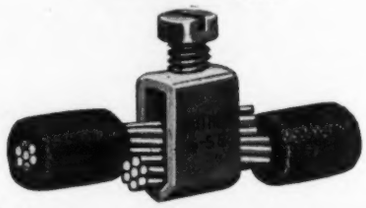

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Vice type—strong and easily connected or disconnected.

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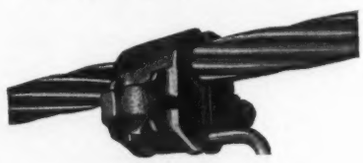

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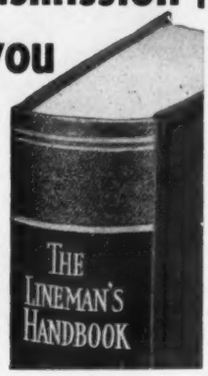

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9. Pole-line Erection
10. Tower-line Erection
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LETTERS TO THE EDITOR

Dividend Rate Reductions

To the Editor of ELECTRICAL WORLD:

I have read with much interest your lead editorial, December 26 issue, "Rich in Promise." I like it.

In it you say, "There is likelihood that the new year might see an increase in the number of rate reductions."

The time seems so unwise for any rate reductions. If some action must be taken in certain territories, can't we encourage its being done in temporary fashion—say in rebate or dividend form?

When we put out our "wage reduction dividend" coupon idea in 1940 there was not a single objection raised and you ran some editorial advice to the utilities to go slow in further rate reductions, and the result was a crystallizing of thought against further reductions.

The dividend idea would be more than ever applicable today to avoid any permanent rate reduction, and in coupon form it would attract the customer's attention more than would a mere entry on the customer's bill.

ASHTON B. COLLINS,
New York, N. Y.

•

Optional Kva. Rate Improves Power Factor

To the Editor of ELECTRICAL WORLD:

After reading your editorial in the December 26, 1942, issue of ELECTRICAL WORLD "What to Do About Power-Factor Clauses," we thought maybe you would be interested in the experience our company has had with kva. rates.

Several years ago (1937) we offered our industrial customers an optional kva. rate which crosses our industrial kw. rate at approximately 80 percent power factor, and at 90 percent power factor effects a reduction of approximately 9 percent. The optional kva. rate is in terms of kva. billing demand, and a bonus on the energy charge for average power factor above 80 percent, with a top limit at 90 percent, the minimum under this optional rate being 100 kva. The customer purchases the capacitors and executes a firm five-year contract. The difference in the rate pays for the capacitors in approximately 15 to 18 months and, in addition, the customer realizes additional savings in

ALL the strength and durability inherent in steel are combined—with definite economies—in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process provide lasting protection against corrosion.

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Subox, Inc.
NORTH ARLINGTON, N. J.

I^2R losses and increased feeder capacity.

As of December, 1942, 188 of our industrial customers, aggregating 217,000 kva. of billing demand, with a power factor of 90 percent or better, were billed on this optional rate.

Under this plan the correction is installed at the most efficient and economical point of utilization, and, in this day and time with primary transmission and transformation, as well as customer-feeders and equipment operating to capacity, plus it being next to impossible to obtain critical materials, especially synchronous condensers to relieve these conditions, our optional rate is working out very nicely for everybody concerned. As far as dollars and cents are concerned, it is quite possible system regulation and correction can be obtained for a lesser amount by the utility installing 5,000-, 10,000- or 15,000-kva. synchronous condensers at strategic points on its system.

EDWIN M. CLAPP,
Manager Power Division,
Georgia Power Company.

•

Suggestion System Holds Employee Interest

To the Editor of ELECTRICAL WORLD:

As Walter Winchell would say, "Orchids to H. B. Lankford for an interesting story" in your December 12 issue. The Pennsylvania Water & Power Co. has received its orchids in the form of dollars saved and employee interest.

From an employee's viewpoint there are many cases where the management has overlooked a good thing for itself in not being more receptive to suggestions from the man on the job. Some managers may have the naive idea that any good suggestion to the foreman will automatically come through and be put to use.

That is not true.

Far too many foremen will ridicule and belittle any ideas offered, then later "think" of it themselves. There are others who will say "yes, yes," but never get around to doing the little work necessary to use the idea. The new employee will soon say: "The hell with it, there's no use trying to tell him anything"; the old ones learned long ago to keep their mouths shut.

Mr. Lankford mentions as one of the duties of the secretary of the suggestion committee, to "follow up the disposition of the suggestion".

That is his most important duty.

If he fails in that the flow of suggestions will drop to a mere trickle. I know of a case where a safety suggestion passed the safety committee with approval, fittings were purchased, then

O.Z. END FITTINGS!
These covers can be furnished blank or drilled for any number of holes.
Compact — ideal where space is limited and a neat appearance plus strength is required.
Body casting is highest grade malleable iron, cadmium plated.
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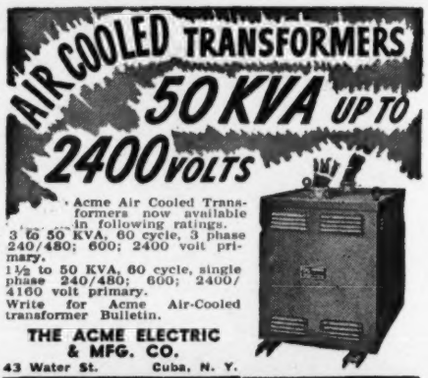
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Acme Air Cooled Transformers now available in following ratings.
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ACME WIRE PRODUCTS

VARNISHED INSULATIONS
MAGNET WIRE COILS

for about three years the plant superintendent used the "pocket veto"; these fittings are still lying in his office. Naturally there have been very few safety suggestions offered from that plant.

Another way to cut down the flow of safety suggestions is to accept *only* those that cost nothing to use. About eighteen years ago the writer was asked to serve on a committee to study a plant from the safety angle and offer suggestions for improvements. We recommended a few additional guards and permanent ladders at a cost of about $300. The result was exactly nil, until about two years later, when the State Industrial Commsision *ordered* in about five times as much equipment as we had thought of, many times more than we had asked for.

So, if the management of any industry considers using a suggestion system, it should go *all* the way or not start at all. A poorly operated plan can do more harm to employee good will than no plan at all, but a well run one can benefit both management and employee.

Again I say, "Orchids to H. B. Lankford."

GEORGE I. SMITH,
Duluth, Minn.

•

Safety Factors

To the Editor of ELECTRICAL WORLD:

In general, the factor of safety of a material is the ratio of its stress at failure to its normal operating stress. It follows that when the material is used with a safety factor of unity it will fail, and that as long as any factor above unity is maintained it will not fail.

"Minimum safety" must "recognize a certain reasonable factor of safety," and "reasonable" may have wide tolerances, as you say in your editorial in the December 12 issue. The determination of these tolerances is of great importance to the manufacturer and their maintenance is a greater concern to the user of the material.

"Minimum safety" must be inherent in the material at the end of its service period; therefore, until materials are devised which do not, with time, lose their resistance to the stresses placed upon them, we must balance this loss by a sufficient initial margin of safety. There are materials, such as some alloys of steel, in which the loss is small enough to allow a reduction in this initial margin or to extend greatly the guaranteed life-span of the equipment in which they are used.

Near the other extreme of durability is a material with which I am more familiar—linemen's rubber protective equipment (long may it wear!). Perhaps you had that in mind when you spoke of "probable human abuse." Safety *is* a "thing, *per se*" of this material, but a sustained high safety factor is not. We are faced here with a rapidly falling factor due to abuse as well as to service use of the material, the relative effects being determinable by the large consumer of this equipment. No doubt a great deal of such data is in back of all the requirements of the Code.

I have little occasion to refer to the Code in my line of duty, but have not regarded it as a minimum standard of operation, and it is in this direction that the requirements have been lowered, is it not? It may have been considered as a minimum standard of safety before the war, but now we may find it necessary to reduce our own safety somewhat, that we may the better support those who have completely ignored theirs.

If we do not know what the minimum standard of safety is, let us keep as far above it as good engineering and economics will permit, continuing to collect data pertinent to the determination of that minimum. The rule is especially applicable to the "superstutes" (substitutes) now available. Analysis of such data will enable us to narrow the tolerances mentioned above, or to decide that they must remain as they are. As long as these data show a spread of failure values, minimum safety requirements must exceed the highest point of the spread. The unit of safety is known, being fixed by the duty of the material. This high point is the "shifting thing" of which you speak, and it *is* "dependent upon the vagaries of design or material supply.

JOHN F. STEVENS,
Masonville, N. J.

•

Replacors

To the Editor of ELECTRICAL WORLD:

I don't know whether you are still looking for that substitute for "substitute" or not. If so, I'd like to throw the word "replacor" into the pot for your consideration.

"Replacor" leaves the thought that the material being used now instead of the original is a replacement either temporary or, as we may well find, permanent. It also removes that stigma that sometimes, right or wrong, attaches itself to a "substitute" material.

Yours for bigger and better "replacor" business.

M. M. KENNEALLY,
Vice-President in Charge of Sales,
Porcelain Insulator Corp.,
Lima, N. Y.

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Here are the products of 290 manufacturers described and classified with more simplicity than a mail order catalog.

It tells you:

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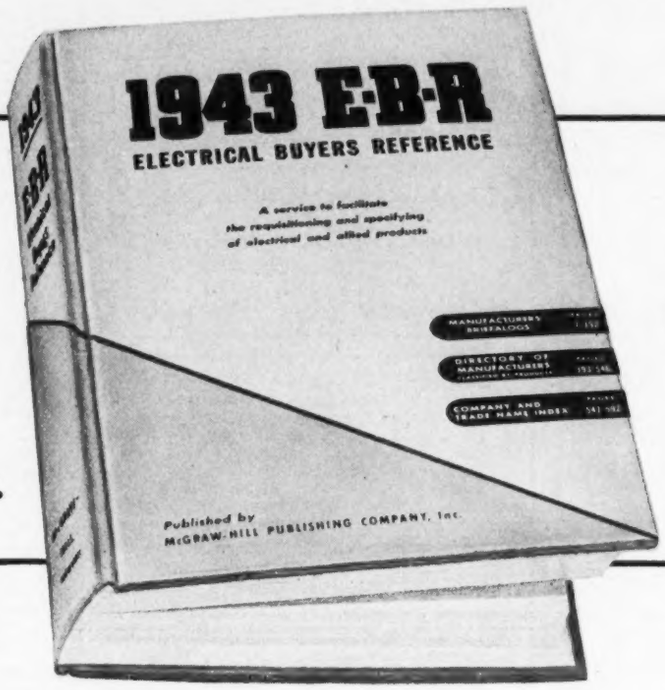
1943 E-B-R
ELECTRICAL BUYERS REFERENCE
A service to facilitate the requisitioning and specifying of electrical and allied products
MANUFACTURERS' BRIEFALOGS
DIRECTORY OF MANUFACTURERS
COMPANY AND TRADE NAME INDEX
Published by McGRAW-HILL PUBLISHING COMPANY, Inc.

290
MANUFACTURERS
369
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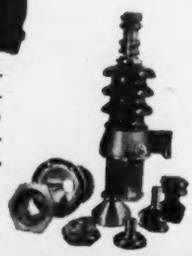

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Send me for ten days' examination on approval the Croft Library of Practical Electricity, 7 vols. If satisfactory I will send you $3.00 in 10 days and $3.00 monthly until the price of $18.00 is paid. If not wanted, I will return the books postpaid. (To insure prompt shipment write plainly and fill in all lines.)

Name .....
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Recent Rate Changes

TAMPA ELECTRIC CO. recently put into effect a 30 percent reduction in electric power rates, following the announcement by Peter O. Knight, president of the utility, that he had accepted without appeal the decision of Circuit Judge Ira A. Hutchison of Panama City upholding the Tampa Utility Board's order reducing rates 30 percent (ELECTRICAL WORLD, February 6, page 112). "We have concluded to accept the decision of Judge Hutchison," said Mr. Knight. "The money held in escrow will be distributed and the rates fixed by the Tampa Utility Board in August, 1940, will be put into effect inside the city limits of Tampa as soon as possible." More than $1,500,000 is held in escrow by the Circuit Court, it was estimated. In the meantime the utility company in arguments before Circuit Judge Sandler sought dismissal of a suit in which three consumers outside the city ask for rate parity with city consumers. Company attorneys based their argument on the contention that the power to fix rates is a legislative, not judicial, function. Originally, the suit was filed in September, 1941. The plaintiffs contended in their suit that the company receives $2,200,000 annually from inside Tampa and $1,800,000 from outside Tampa users. Judge Sandler deferred ruling.

PENNSYLVANIA POWER & LIGHT CO., in the midst of an investigation launched by the state Public Utility Commission having withdrawn and cancelled tariff supplements proposing increases in commercial and industrial rates for electricity (ELECTRICAL WORLD, November 14, 1942, page 157), the commission has dismissed "without prejudice" the approximately 100 complaints filed against the proposed increases last summer. In dismissing the complaints the commission stated that this withdrawal and cancellation by the utility was approved by the commission on November 6, 1942, thus removing the basis for the complaints.

CASHTON, WIS., municipal electric plant put into effect on January 1 reduced rates that will mean an annual saving of approximately $1,000 to customers.

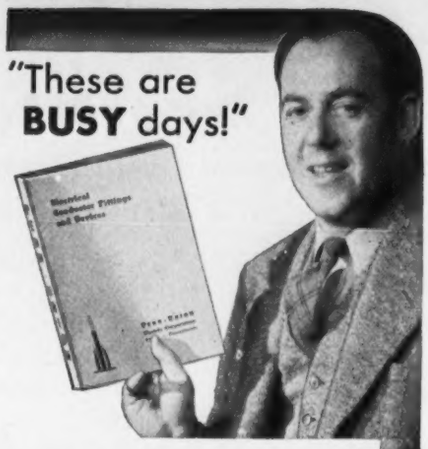
•

Recent Legislation

Among the bills introduced in state legislatures affecting the electric light and power industry, are the following:

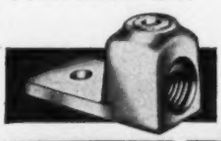
NEW YORK—Under the provisions of a bill introduced in the Senate by Louis B. Heller, Democrat of Brooklyn, and referred to New York City committee, the New York City Power Authority is created to consist of not more than seven members to be appointed by the Mayor, to furnish public utility service to public and private consumers, to acquire and operate plant or facilities and collect charges sufficient to pay interest and principal on debts and expenses including retirement reserve, limits outstanding bonds therefor to $50,000,000 and provides that question whether authority shall be created shall be submitted to voters of city at general election in 1943.

OREGON—Bill has been placed before the Legislature levying 3 percent tax on all private utilities to increase old age pension funds. The bill would put municipal electric utilities on the tax rolls.



SAVE TIME—select your conductor fittings from this Catalog . . ALL good types

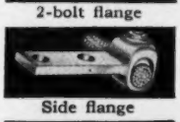
You can buy Tee Connectors, Grounding Clamps, Cable Taps . . . Straight, Parallel, Elbow and Cross Connectors . . . Service Connectors, Bus Supports, Terminals . . . *practically every good type, in the COMPLETE line.*



JUST FOR EXAMPLE— here are some of the standard Penn-Union Vitite terminal lugs:

2-bolt flange

45° flange


Side flange

Center tongue

Round, 45°

Round, 90°

Round, offset

Round, center

These types and many more—in a *complete* range of sizes. Write for Catalog.

Penn-Union connectors are the first choice of leading utilities, industrials, electrical manufacturers and contractors. They have found that *"Penn-Union" on a fitting is their best guarantee of Dependability.*

PENN-UNION ELECTRIC CORPORATION
ERIE, PA. *Sold by Leading Jobbers*

PENN-UNION
Conductor Fittings

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BOX NUMBERS in care of any of our New York, Chicago or San Francisco offices count 10 words additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

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AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.W.

NEW ADVERTISEMENTS received by 10 A. M. March 1st will appear in the March 6th issue subject to limitations of space available

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EXECUTIVE AND TECHNICAL MEN. Qualified candidates desiring $2,500 to $20,000 position may contact employers through our confidential services, established 27 years. The National Business Bourse, 20 W. Jackson Blvd., Chicago.

POSITIONS WANTED

METER INSTRUMENT MAN—16 years training and experience in Utility field. Capable of meter department supervision. PW-508, Electrical World, 330 W. 42nd St., New York, N. Y.

ELECTRICAL AND STRUCTURAL ENGINEERS, experienced power house, substation, and transmission line designers, immediately available. Public utility engineers completing authorized construction projects will gladly arrange interviews and otherwise bring your requirements to such men's attention. PW-501, Electrical World, 520 N. Michigan Ave., Chicago, Ill.

ELECTRICAL ENGINEER—17 years electric utility design, construction, operations. Experienced in supervision of design and construction. Registered engineer. Age 38, married, U. S. citizen. Now employed, desires new connection with utility or manufacturer. PW-513, Electrical World, 520 N. Michigan Ave., Chicago, Ill.

WORK WANTED

MANUFACTURERS AGENTS well established in Chicago territory with warehousing, and engineering facilities, desires additional lines. PW-504, Electrical World, 520 N. Michigan Ave., Chicago, Ill.

WANTED

WANTED By Established Electrical Manufacturer—New type electrical fittings or products in conjunction with same, that are used by Electric Utilities for post-war manufacture. Patented articles preferred but not essential. W-507, Electrical World, 330 W. 42nd St., New York, N. Y.

UNUSUAL OPPORTUNITY

For an electrical engineer with technical education, experience and ability to develop into superintendent of operation of public utility. Must be qualified in all phases of production, transmission and distribution and have ability to supervise. Experience in town of approximately 50,000 desirable. Replies held in strictest confidence.

P-512, Electrical World
330 West 42nd Street, New York City

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We solicit inquiries from qualified candidates who desire to contact employers for positions paying from $2,500 to $20,000 per year. Confidential. Est. 28 years.
(Inquiries from Employers entail no obligation)
THE NATIONAL BUSINESS BOURSE
H. H. Harrison, Director
20 W. Jackson Blvd., Chicago

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Electrical, Electronic, and Mechanical Engineers (men or women) with at least some development laboratory experience. Recent graduates also considered.

Old established plant located in Central Indiana, normally manufacturing precision parts for wide range of industries, including aviation, automobile and electrical. At present devoted to developing and producing war equipment.

Excellent post-war opportunities for those who qualify. If not employed in war production to highest skill, write, giving full details of experience, education, age, draft status and salary expected. Address

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3000 KW., 4000 KW. and 7500 KW. 4100V and 480V. 60 cy., 3 ph. TURBOS
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1500 CFM. COMPRESSOR MTR. DR.
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Service backed by 38 years' experience

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200 KW. 720 RPM. 3/60/240, Gen. Elec. ATB.
DC GENERATOR
75 KW. 250 Volt, 500 RPM. Northern 2 brg.
PLATING GENERATOR
2500 Amp. 6 Volt, 900 RPM. Zucker, Learit & Loeb
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35 HP. 720 RPM. 3/60/220-440, Gen. Elec. IK.
40 HP. 1800 RPM. 3/60/2300, Gen. Elec., KT.
50 HP. 1200 RPM. 3/60/220-440, Wagner
SLIP RING MOTORS
40 HP. 1800 RPM. 3/60/220-440, Fair. Morse BB.
40 HP. 1200 RPM. 3/60/2300, Gen. Elec. MT.
40 HP. 600 RPM. 3/60/220-440, Gen. Elec. IM.
CENTRIFUGAL PUMP
1000 GPM. 170' head. Fair. Morse 5" two stage
OIL CIRCUIT BREAKER
1200 Amp. 7500 Volt Gen. Elec. FK-32, 3 P. ST.
ROCKFORD ELECTRIC EQUIPMENT CO.
713 South Wyman St. Rockford, Illinois

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TRANSFORMERS WANTED

in operating condition or burnt out. Mail us list giving complete nameplate data and stating condition.

We Rewind, Repair and Redesign all Makes and Sizes
ALL TRANSFORMERS GUARANTEED FOR ONE YEAR
Prices quoted on request.

THE ELECTRIC SERVICE CO., INC.
"AMERICA'S USED TRANSFORMER CLEARING HOUSE"
STATION M Since 1912 CINCINNATI, OHIO

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SURPLUS TRANSFORMERS

Don't scrap transformers. You can aid the War Effort by sending your list of surplus transformers to us. As we are one of the largest rebuilders and rewinders of transformers in the U. S. we can offer you top prices. Please give complete nameplate details and condition of transformer whether in operating condition or burnt out.

1893—Celebrating Our 50th Anniversary—1943

GREGORY ELECTRIC CO.
2636 S. WABASH CHICAGO

SUCCESSFUL OPERATION GUARANTEED

Every Machine in This Ad is Owned Outright By Us

D C MOTORS

P	Make	Type	Volts	Speed
1500	Whse		550	330
1250	G.E.	MPC	550	130
800	G.E.	MPC	600	600
625	G.E.	MPC	500	130
600	G.E.	MPC	600	650/900
600	Whse.		250	150/275
350	G.E.	MPC	230	450
300	G.E.	DMC	230	400/600
300	Cr. Wh.	CMC	230	1150
300	G.E.	MPC	230	275/550
270	Whse.		500	250/400
250	Al. Ch.		230	525
200	Whse.		230	400
175	Whse.	SK	250	150/525
150	G.E.	RC-19A	230	800/1000
150	Whse.	SK-201	230	300/900
150	G.E.	MPC	230	250/450
125	G.E.	CO-1832	230	625
120	Whse.	SK-180	230	720
100	G.E.	LC-50	230	1200
100	Al. Ch.		230	950/1150
100	G.E.	RC-19	230	575/720
75	G.E.	LC	230	500/1000
75	Whse.	SK	230	475/900
60	El. Dy.	25S	230	525/1050
50/60	Cr. Wh.	65H	230	500/1000
50	G.E.	RC-16	230	650/815

TRANSFORMERS

KVA	Make	PH	Type	Voltages
1000	Pitts.	1	OISC	2300/4600x575
1000	G.E.	1	HKDD	13800x2300
300	G.E.	1	H	13200x2300/575
200	Whse.	1	SK	6900x230/460
200	G.E.	1	H	26400x115/460
100	Whse.	1	OISC	13200x

GEAR UNITS

2—2100 HP Whse., 1800/375 RPM.
1—943 HP GE 5306/1200 RPM.
1—720 HP DeLaval 3600/600 RPM.

MOTOR GENERATOR SETS

3 ph. 60 cycle

1—1500 KW GE 600 V. DC, Gen. dc. to 2100 HP—6600 V. Syn. Motor with exciter.
1—500 KW GE 600 V. DC Gen. d.c. to 700 HP—2200/13200 V. Syn. Motor with Exciter.
2—250 KW GE 250 V. Gen. d.c. to 375 HP—2200 V. Syn. Motor.

TURBO GENERATOR SET

1—500 KW, Whse. 625 Kva., 440 V., 3 ph., 60 cy., 3600 RPM with Parsons 145/175 lb. condensing turbine complete with jet condenser and accessories.
1—500 KW, G.E., 625 KVA, 2300 V., 3 ph., 60 cy. generator with Curtis 4 stage, 150 pound condensing turbine complete with condenser, etc.

ROTARY CONVERTERS

60 Cycle

2—1500 KW, Whse. 720 RPM 650 V. DC with 3-single phase, 33000 V. transformers and panel.
1—1250 KW, G.E. 720 RPM 250 V. DC with 1375 KVA, 3 ph., 2300 V. Transformers and Panels.
2—750 KW, Whse. 1200 RPM, 600 V. DC with 2300/6600/11,000 volts Transformers and Panels.
1—750 KW, Whse. 720 RPM 250 V. DC with three phase 6600/2300 V. Transformer and Panels.
1—375 KW, Whse. 1200 RPM 250/275 V. DC with 2200/6600 V. Transformers and Panels.
1—300 KW, G.E., type HCC, 1200 RPM, DC, 600 V. AC 6 ph., 1200 RPM.

25 Cycle

3—1500 KW, G.E. 225/275 V. DC Booster type each with 1600 KVA, 3 ph. 6765 volt Transformers and Panels.
1—500 KW, G.E. 225/275 DC Booster type with 500 KVA 3 ph. 6765 volt Transformer and Panels.

A C MOTORS

3 phase—60 cycles

Synchronous

	HP	Make	Type	Volts	Speed
1—	500	G.E.	TS	440	360
1—	250	G.E.	ATI	220	450
1—	225	G.E.	ATI	240	600
1—	200	Whse.		440	514
1—	150	G.E.	TRB	220x440	450
1—	150	Whse.	G	2300	900
1—	150	Whse.		2200/550	1800
1—	125	G.E.	ATI	240	257

Slip Ring

1—	800	Al. Ch.		440	885
1—	600	G.E.	IM	2200	900
1—	450	Whse.	CW	2200	875
1—	400	G.E.	MT	550/440	300
1—	400	Al. Ch.		2300	505
1—	400	Al. Ch.		440	1200
1—	350	G.E.	IM	2300/4000	257
1—	300	G.E.	IM	2300	585
1—	250	G.E.	MT-410	2300	400
1—	250	G.E.	MT	4000/2300	257
2—	200	Whse.	CW	2200	514

Squirrel Cage

1—	500	G.E.	1-17B	2200	695
1—	300	Whse.	CS	550	580
2—	300	G.E.	IK	2300	600
1—	300	Al. Ch.		2200	1160
1—	250	Al. Ch.		220/440	1150

SINE WAVE SET

Main unit—GE 3 unit, 4 Brg. consisting of motor—15/35 HP. 750/1800 RPM. 230 V. DC Gen—15 KW—220/110 V., 1800 RPM—3 ph., 60 cy.
Ref. Gen.—5 KW—36/18 V., 1800 RPM, 3 ph., 60 cy., with stator shifting.
Complete with Exciter Cet, Voltage regulator, panels and accessories.

RE-NU-BILT BELYEA MOTORS

What are your requirements? units up to 5000 kw available in stock.

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J.L.HEMPHILL & CO. Inc.
ELECTRICAL ENGINEERS AND EQUIPMENT
1600-1604 53rd Street, North Bergen, N. J.
N. Y. C. Tel.: LOngacre 5-3227—N. J. Tel.: UNion 3-2600

MOTORS GENERATOR SETS

1—200 KW, 600 volt, GE, sq. cg.
2—250 KW, 250 v., GE, Synch.
2—200 KW, 125 v., Wsgh., Sq. Cage.
1—100 KW, 125 v., GE, Sq. Cage.
1—100 KW, 125 volt, Electric Products, syn.

MOTOR—3 PHASE 60 CYCLE

1—720 HP, 360 RPM, 440 volt, G.E., syn.
1—500 HP, 1200 RPM, 440 volt, G.E., syn.
1—400 HP, 514 RPM, 440 volt, Westg., slip ring.
1—335 HP, 600 RPM, 2300 volt, G.E., syn.
1—300 HP, 720 RPM, 2200 volt, G.E., sl. rg.
1—250 HP, 514 RPM, 4000 volt, G.E., syn.
1—250 HP, 600 RPM, 4000 volt, G.E., sync.
1—200 HP, 900 RPM, 440 volt, Westg., sl. rg.
1—200 HP, 600 RPM, 2200 volt, G.E., sl. rg.
1—200 HP, 450 RPM, 2200/4000 v., G.E., sl. rg.
1—150 HP, 1800 RPM, 2300 volt, Al. Ch. sq. cg.
1—150 HP, 900 RPM, 440 volt, Al. Ch. sl. rg.

MOTORS—D. C. 230 VOLTS

1—250 HP, 760 RPM, Electro Dynamic.
1—150 HP, 750 RPM, Electro Dynamic.
1—125 HP, 600 RPM, Westinghouse, SK.
1—100 HP, G.E., 575 RPM.
1—100 HP, 625 RPM, G.E.
1—65 HP, 1000 RPM, G.E., type RC.
1—50 HP, 750 RPM, Westinghouse, type SK.

TRANSFORMERS

2—400 KVA, G.E., 4156-240/480 v., Scott taps.
3—300 KVA, Pittsburgh, 7800/440 volts.
3—250 KVA, Westinghouse, 5500/440 volts.
1—200 KVA, Pittsburgh, 7800-110/220 volts.
3—150 KVA, G.E., 33,000 2300/4000 Y.
1—150 KVA, G.E., 2400-120/240 volts.
3—100 KVA, Westinghouse, 11,430/250 volts.
1—100 KVA, Pittsburgh, 1375/2750-110/220 volts.
1—100 KVA, G.E., 2200-110/220 volts.
3—100 KVA, Westinghouse, 13200 250 volts.

MOTORS—VARIABLE SPEED 230 VOLTS

2—100 HP, 475/1375 RPM, Electro Dynamic.
1—90 HP, 470/940 RPM, General Electric.
1—75 HP, 525/1575 RPM, Electro Dynamic.
1—60 HP, 600/1200 RPM, General Electric.
1—35 HP, 500/1500 RPM, Westinghouse.
1—35 HP, 350/1050 RPM, Electro Dynamic.
1—30 HP, 225/900 RPM, Crocker Wheeler.
2—25 HP, 300/900 RPM, Electro Dynamic.
1—20 HP, 750/1500 RPM, General Electric.
1—15 HP, 300/1200 RPM, G.E.
1—13/18 HP, 350/1200 RPM, Electro Dynamic.
1—5 HP, 600/1200 RPM, General Electric.
1—5 HP, 450/1800 RPM, Crocker Wheeler.

ALTERNATORS

1—625 KVA, 3600 RPM, 600 volt, G.E.
1—400 KVA, 400 RPM, 240 volt, Westg.
1—250 KVA, 720 RPM, 230 volt, G.E.
1—200 KVA, 3600 RPM, 240 volt, Allis Chal.
1—62½ KVA, 3600 RPM, 220 volt, Allis Chalmers

TURBO-GENERATORS

600 KW, Terry dual bleeder condensing Turbine only.
1—500 KW, G.E., 3 ph., 60 cy., 480 volt, bleeder.
1—375 KVA, Westinghouse, non-condensing.
1—300 KW, G.E., 3 ph., 60 cy., 220 volt, cond.
1—200 KW, G.E., 3 ph., 60 cy., 220 volt, cond.

OIL CIRCUIT BREAKERS

1—3000 amp., 15,000 v., 3 pole, G.E., type FK-130.
1—3000 amp., 600 v., 4 pole, G.E., type FK-24.
1—1600 amp., 7500 v., 4 pole, Westg., B-2.
1—1200 amp., 15000 v. 4 pole, Westg., B-2.
Also complete stock of small sizes.

Complete Line of A.C. and D.C. Motors and Generators

CHECK OUR STOCK!

TRANSFORMERS
MOTORS
AC-DC—25 and 60 cy.

SPECIALS

1—300 HP. Gen. Elect. Slip-Ring Motor, 3/60/2200 V. 1200 RPM.

1150 HP. G. E. Synchronous Motor 25/3/2200/375.

GENERATOR SETS
FREQUENCY CHANGERS
GENERATORS

SPECIALS

1—100 KW Motor Generator Set, Generator 220 V DC. Motor 3/25/2200 V.

ERIE ELECTRIC COMPANY
124 Church St., Buffalo, N. Y.

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TRANSFORMERS

Three type SK Westinghouse, 75 KVA Transformers, 6900, 6585, 5960 volts to 460, 230 volts, 60 cycle, style number 305127. Good condition. Presently located at Casper, Wyoming.

CONTACT

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SAVE TIME

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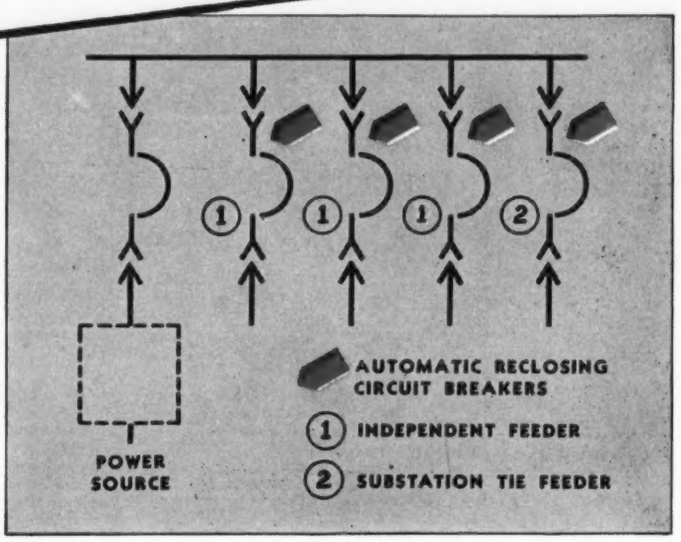
★ **These companies have supplied additional buying information on their products in the 1943 edition of the Electrical Buyers' Reference**

News of Electrical Protection

Wider Industrial Use of Automatic Reclosing Circuit Breakers



Schematic diagram indicating use of automatic reclosing circuit breakers on feeders and for sectionalizing a tie-line to another substation.

AMONG ENGINEERS in industrial plants, there is evidence of growing interest in the advantages of automatic reclosing circuit breakers. Much of the interest centers on applications for d-c systems in which, after outage, it is safe and otherwise desirable to have service restored at the instant a fault has been cleared.

Wider use of unattended substations, where automatic reclosing is necessary, has helped in some degree to popularize the automatic type of equipment. But the basic causes are the immediate and long-range values that engineers now see in providing means to assure the best continuity of service. War-time pressure for peak production is proving to many men, more pointedly than ever before, the sound and lasting economy of avoiding needlessly prolonged interruptions.

Automatic reclosing of circuit breakers is a thoroughly established art. On mining and street-railway systems, I-T-E has literally hundreds of installations. The equipment localizes faults —confines a disturbance to that portion of the system on which it arises. As soon as conditions are right, the circuit breaker itself restores the power.

Make a note about automatic reclosing circuit breakers. Industry will be using more of them. Keep them in mind for long-range plans. I-T-E engineers, whose experience dates from the pioneering installations years ago, will help you.

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I-T-E

AIR SWITCHGEAR

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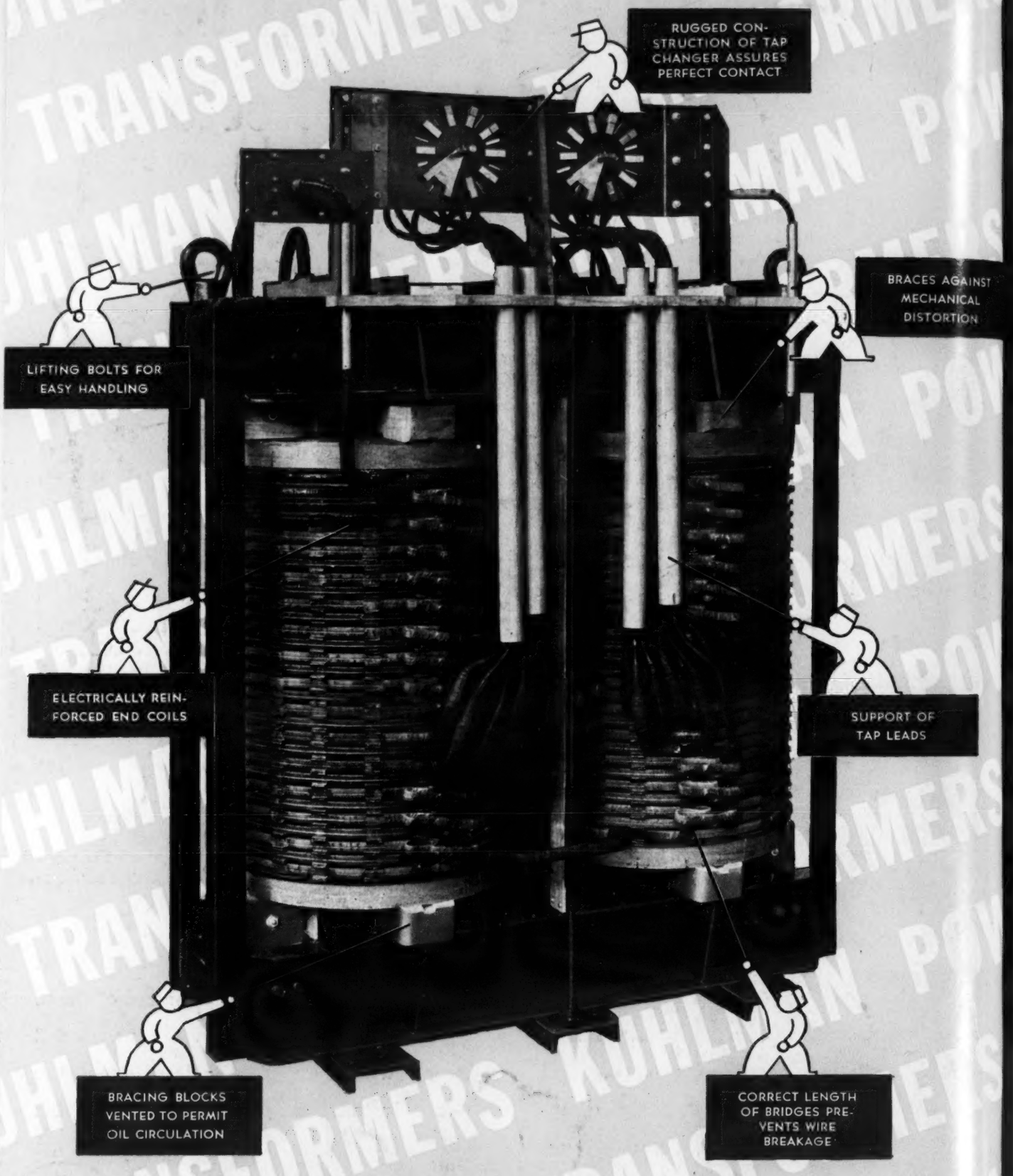
Representatives in Principal Cities

CIRCUIT BREAKER CO., PHILADELPHIA, PA.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BRACES AGAINST MECHANICAL DISTORTION
LIFTING BOLTS FOR EASY HANDLING
ELECTRICALLY REINFORCED END COILS
SUPPORT OF TAP LEADS
BRACING BLOCKS VENTED TO PERMIT OIL CIRCULATION
CORRECT LENGTH OF BRIDGES PREVENTS WIRE BREAKAGE

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